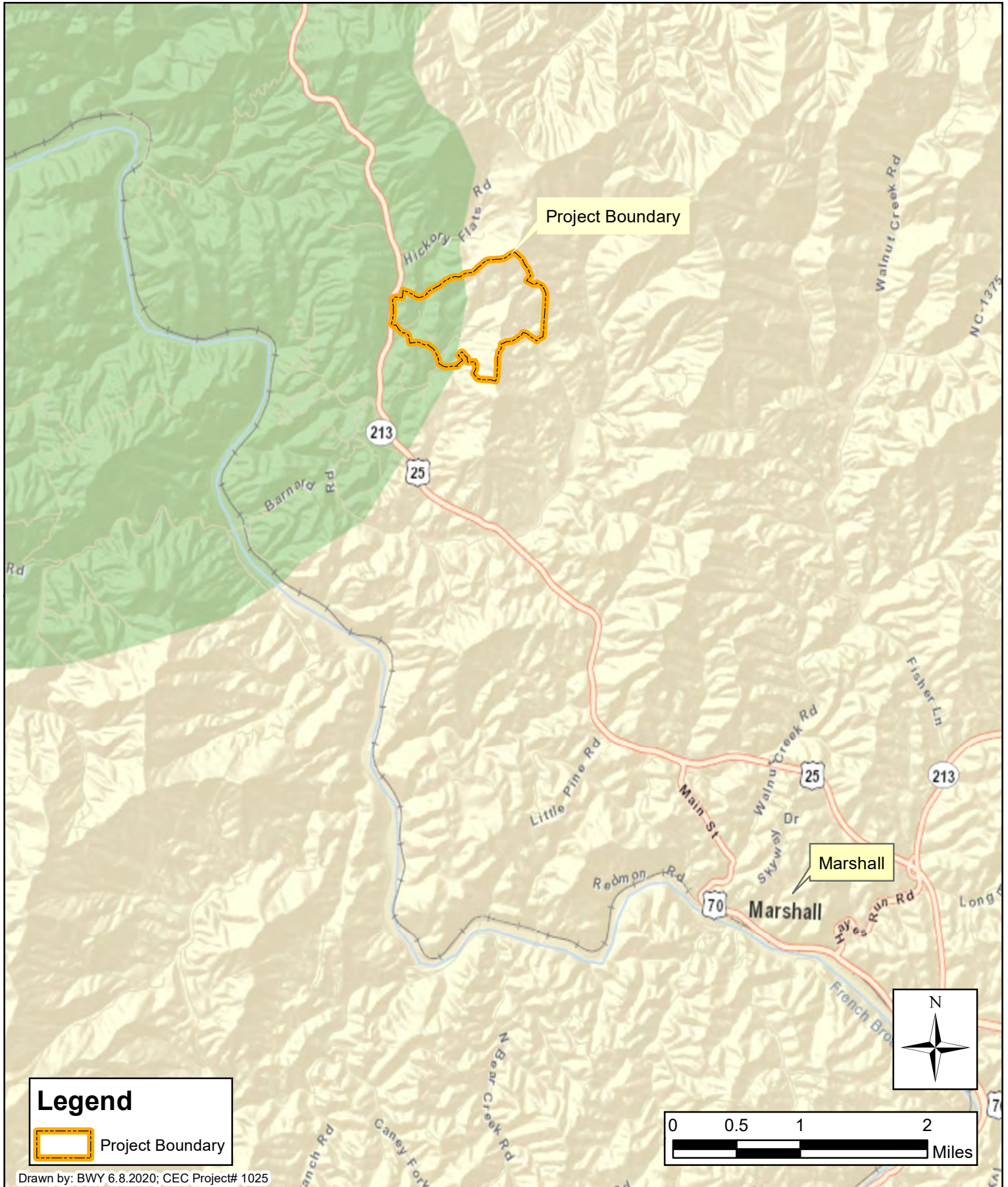


Mulberry Gap Farms (+/- 448 AC)



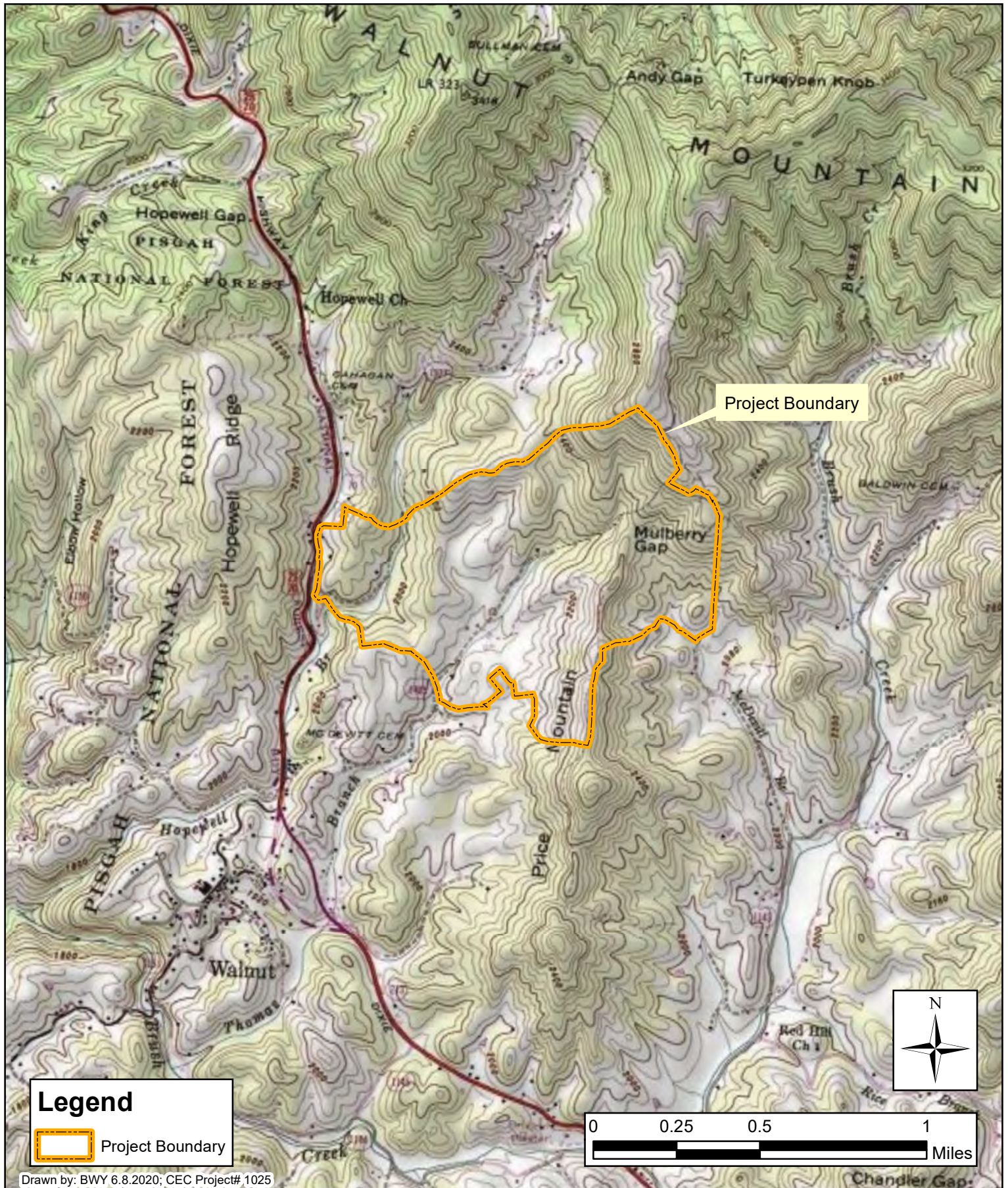
Madison County,
North Carolina



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Hendersonville, NC 28791

Site Vicinity
Figure 1

Mulberry Gap Farms (+/- 448 AC)



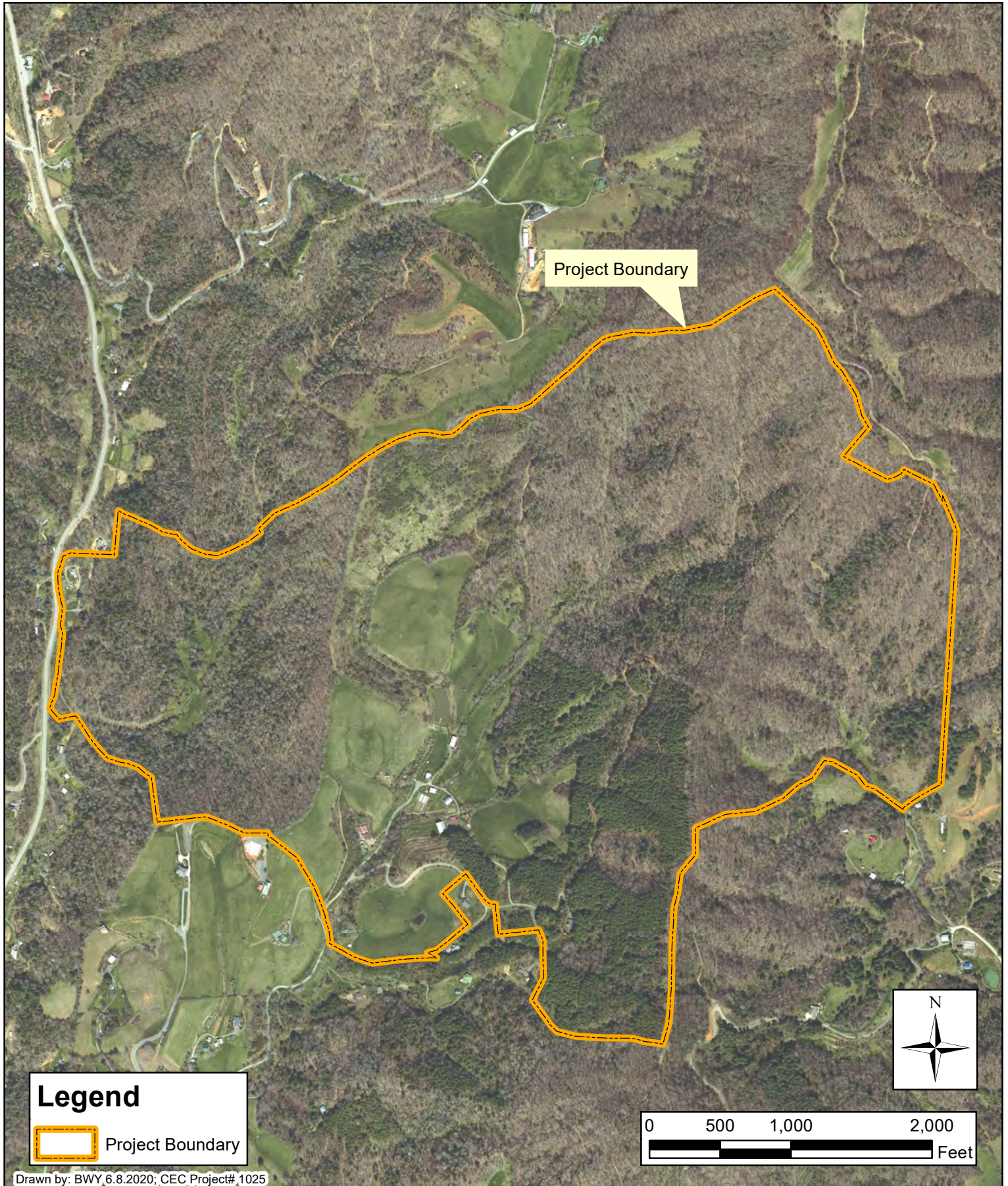
Madison County,
North Carolina

ClearWater

145 7th Avenue West, Suite B
Hendersonville, NC 28791

USGS Topographic Map
Marshall Quad
Figure 2

Mulberry Gap Farms (+/- 448 AC)



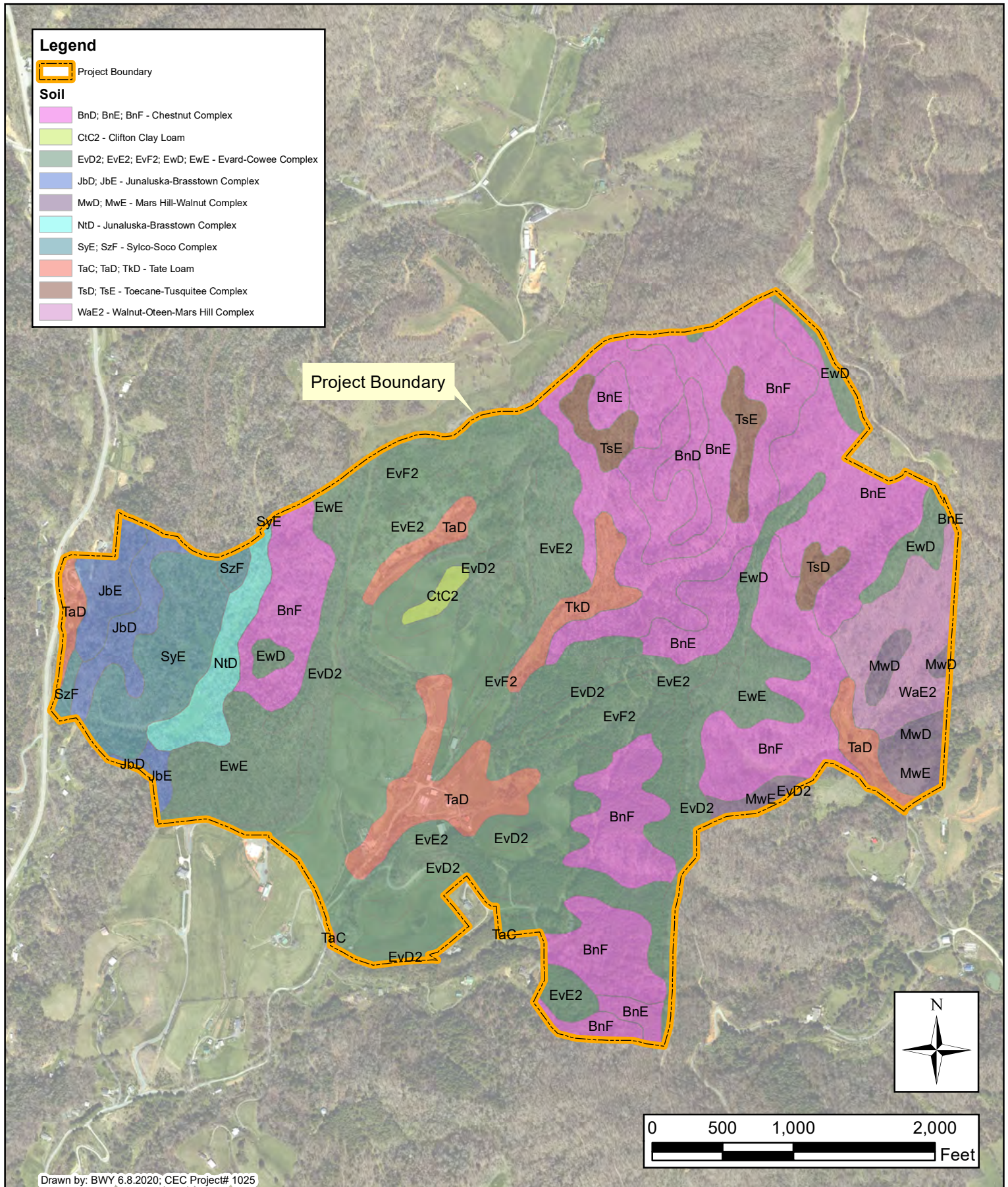
Madison County,
North Carolina



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Aerial Map
NCCGIA (2018)
Figure 3

Mulberry Gap Farms (+/- 448 AC)
















Madison County,
North Carolina



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Hendersonville, NC 28791

USDA Soils Map
Figure 4

LEGEND	
	PROPERTY BOUNDARY
	WETLAND - NO DISTURBANCE
	LINEAR WETLAND
	NON-JURISDICTIONAL WETLAND
	NON-JURISDICTIONAL LINEAR WETLAND
	EXISTING OPEN WATER
	STREAM
	CULVERT TO REMAIN
	CULVERT TO REMOVE
	PROPOSED CULVERT
	PROPOSED WETLAND IMPACT
	PROPOSED STREAM IMPACT
	PROPOSED STREAM RESTORATION

IMPACT SUMMARY			
Project Area	448.02 AC		
Jurisdictional Waters of the US			
Perennial & Intermittent Streams	19,514 LF		
Wetlands	1.966 AC		
Existing Open Waters	0.558 AC		
NWP 39 Impacts			
Culvert Crossing Stream Impacts	40 LF	0.005 AC	
*BDA TB4 fill Stream Impacts	46 LF	0.003 AC	
TOTAL NWP 39 STREAM IMPACTS	86 LF	0.008 AC	
NWP 27 Impacts			
Wetland Fill Impacts		0.029 AC	
*BDA TB4 fill Wetland Impacts		0.002 AC	
TOTAL NWP 27 WETLAND IMPACTS		0.031 AC	
NWP 27 Impacts			
Culvert Removal Stream Impacts	268 LF	0.011 AC	
*Stream Enhancement Impacts	240 LF	0.0275 AC	
*BDA Restoration Stream Impacts	1,649 LF	0.1157 AC	
TOTAL NWP 27 STREAM IMPACTS	2,157 LF	0.1542 AC	
*BDA Restoration Wetland Impacts		0.077 AC	
TOTAL NWP 27 WETLAND IMPACTS		0.077 AC	
*Refer to RDE Drawings C101 and C102			

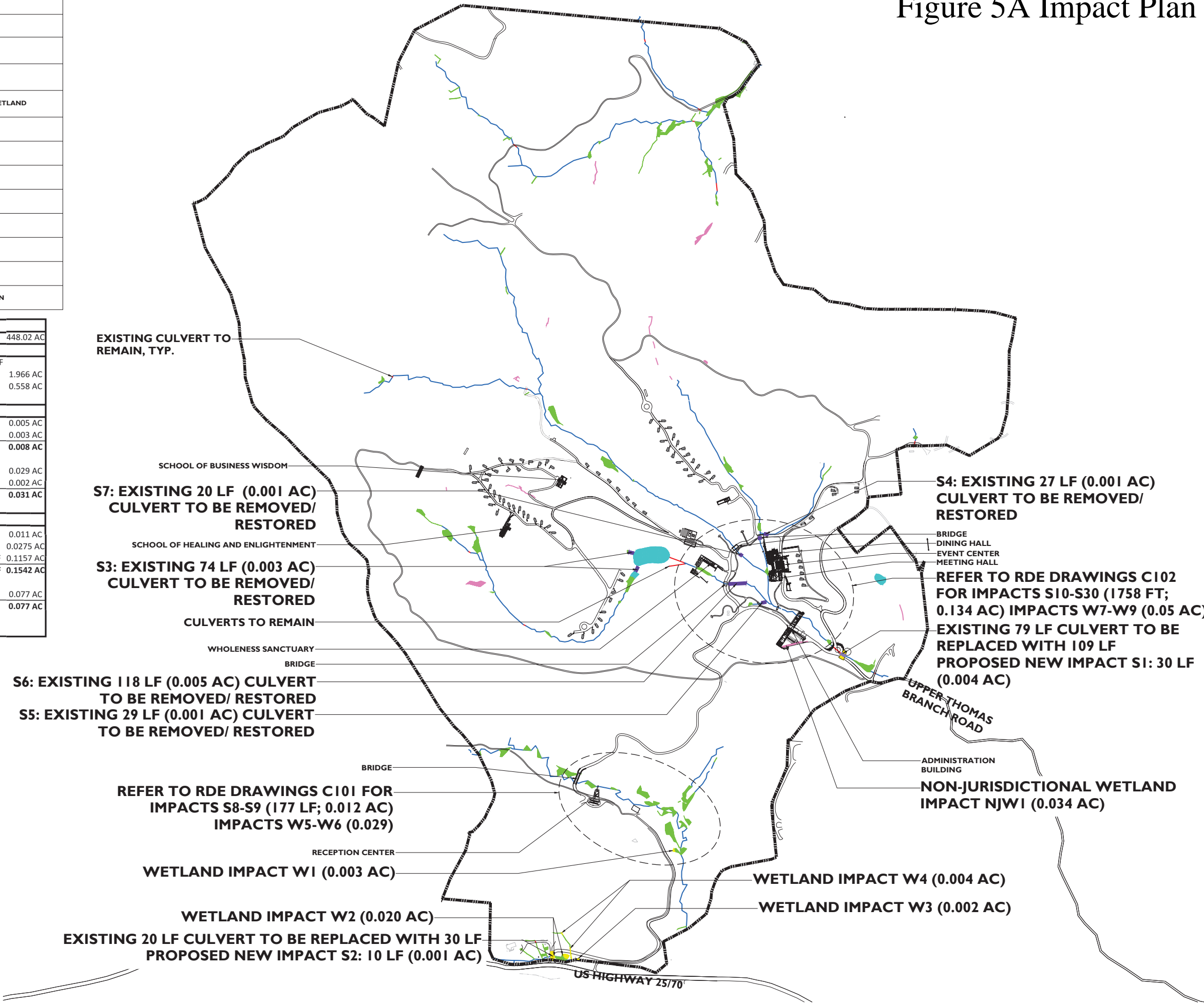


Figure 5A Impact Plan

SEAL

ISSUED

DATE ISSUED: 1-FEB-2020

DRAWN BY: ZAC, KMD, RJB

APPROVED BY: JJO

REVISIONS

SHEET TITLE
PRELIMINARY
IMPACT
PLAN

MULBERRY
FARM -
MADISON, LLC.

MARSHALL, NC

PRELIMINARY
FOR REVIEW PURPOSES ONLY
NOT FOR CONSTRUCTION

0' 150' 300' 600
SCALE: 1" = 300'-0"

L-1.00
SHEET 1 OF 1

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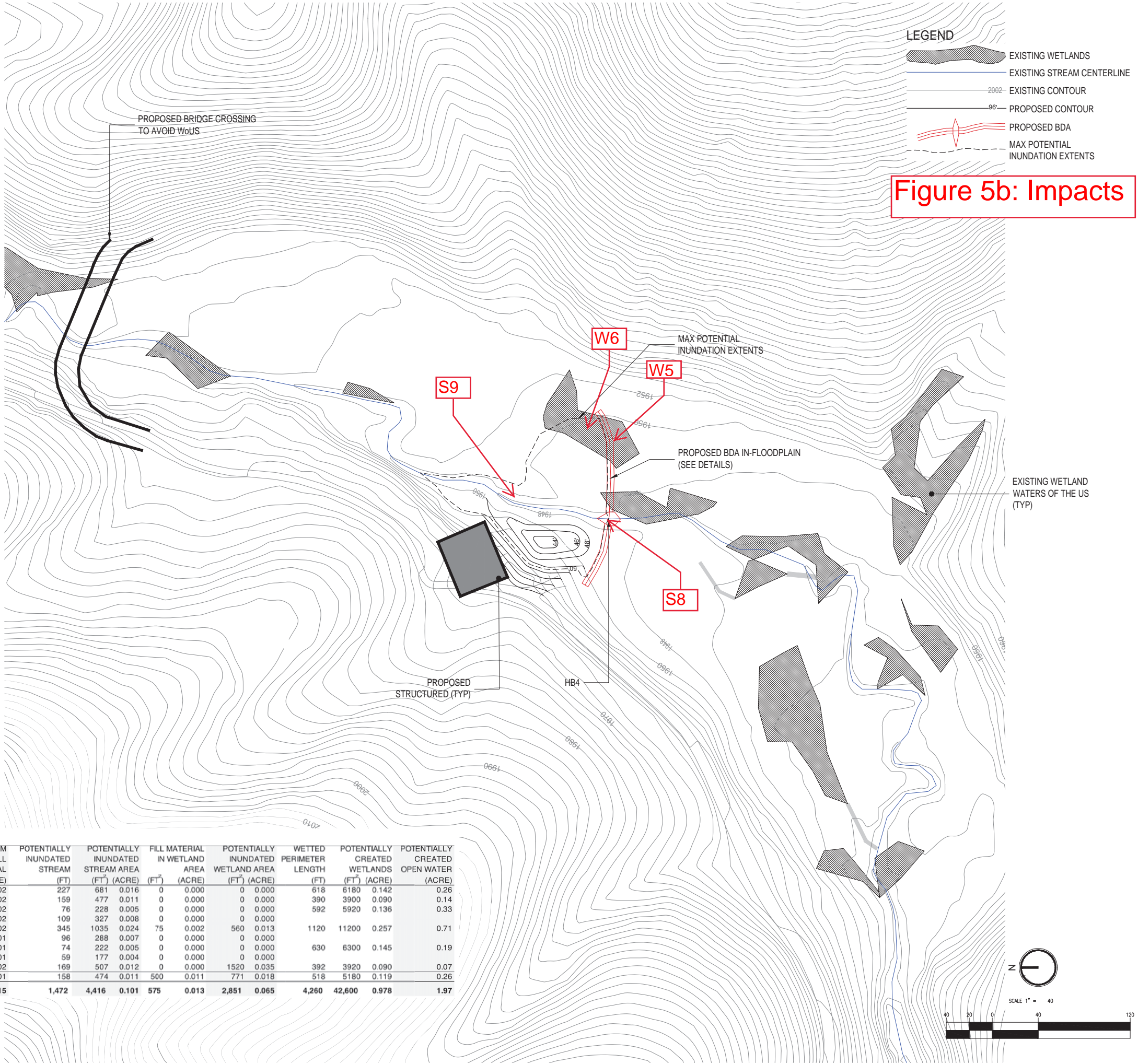


Figure 5b: Impacts

POTENTIAL IMPACTS TO WoUS

IN-CHANNEL BDA	LENGTH OF STREAM IMPACTED BY FILL MATERIAL (FT)	AREA OF STREAM IMPACTED BY FILL MATERIAL (FT ²) (ACRE)	POTENTIALLY INUNDATED STREAM (FT)	POTENTIALLY INUNDATED STREAM AREA (FT ²) (ACRE)	FILL MATERIAL IN WETLAND AREA (FT ²) (ACRE)	POTENTIALLY INUNDATED WETLAND AREA (FT ²) (ACRE)	WETTED PERIMETER LENGTH (FT)	POTENTIALLY CREATED WETLANDS (FT ²) (ACRE)	POTENTIALLY CREATED OPEN WATER (ACRE)
TB1	23	69	0.002	227	681	0.016	0	0.000	0.26
TB2	27	80	0.002	159	477	0.011	0	0.000	0.14
TB3A	30	90	0.002	76	228	0.005	0	0.000	0.33
TB3B	23	69	0.002	109	327	0.008	0	0.000	
TB4A	30	90	0.002	345	1035	0.024	75	0.002	0.71
TB4B	16	48	0.001	96	288	0.007	0	0.000	
TB5A	16	48	0.001	74	222	0.005	0	0.000	0.19
TB5B	16	48	0.001	59	177	0.004	0	0.000	
TB6	23	69	0.002	169	507	0.012	0	0.000	0.07
HB4	19	57	0.001	158	474	0.011	500	0.011	0.26
TOTALS	223	669	0.015	1,472	4,416	0.101	575	0.013	1.97

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Mulberry Gap

Ecosystem Restoration for
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2021-01-15 PCN submittal

ENGINEER

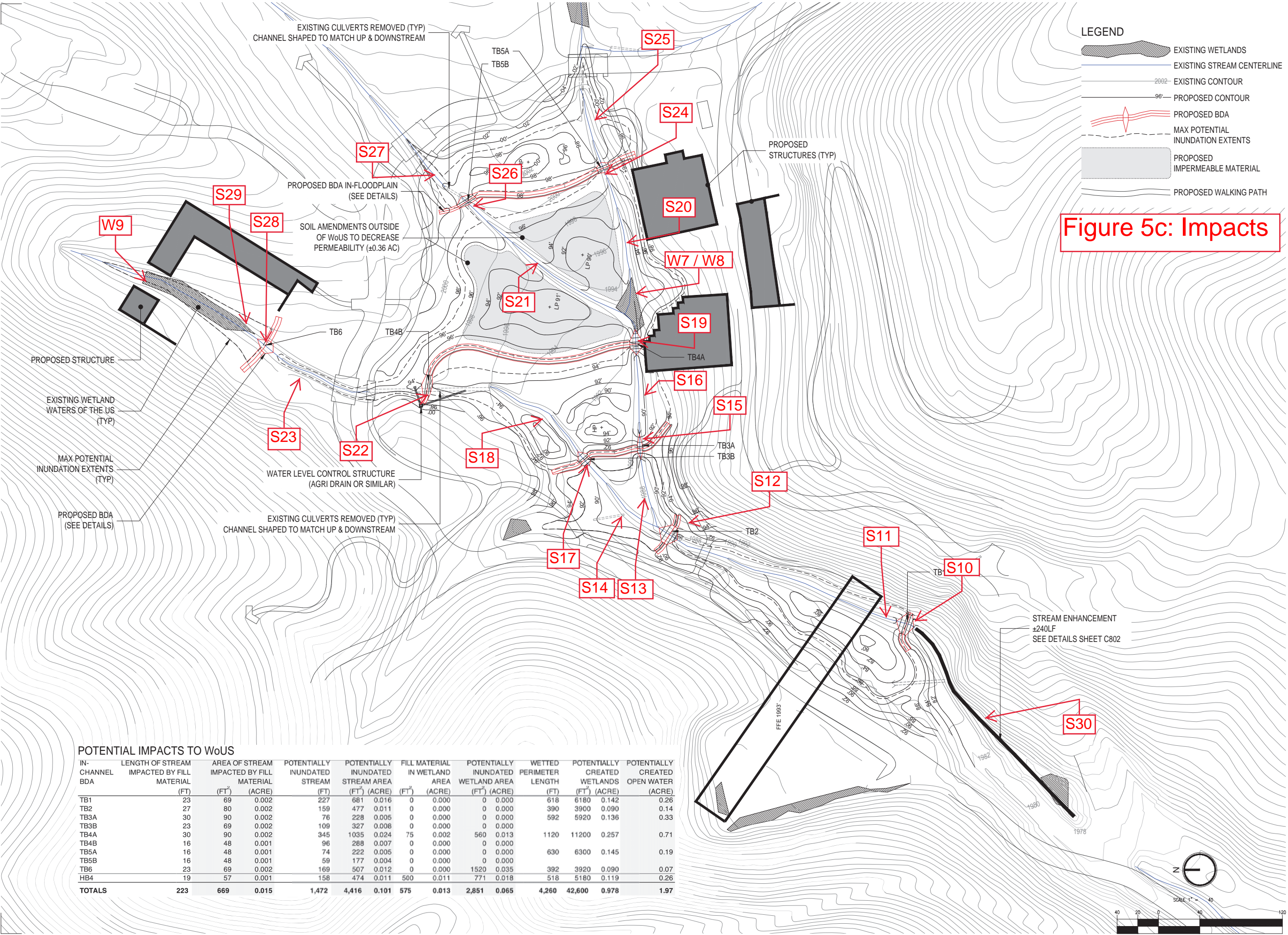
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Philip Ellis, PE NC 39870

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Hendersonville, NC 28792
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Preliminary Drawings

SP-Hopewell Br.

C101



LEGEND

- EXISTING WETLANDS
- EXISTING STREAM CENTERLINE
- 2002- EXISTING CONTOUR
- 96'- PROPOSED CONTOUR
- PROPOSED BDA
- MAX POTENTIAL INUNDATION EXTENTS
- PROPOSED IMPERMEABLE MATERIAL
- PROPOSED WALKING PATH

Figure 5c: Impacts

POTENTIAL IMPACTS TO WoUS

IN-CHANNEL BDA	LENGTH OF STREAM IMPACTED BY FILL MATERIAL (FT)	AREA OF STREAM IMPACTED BY FILL MATERIAL (FT ²) (ACRE)	POTENTIALLY INUNDATED STREAM (FT)	POTENTIALLY INUNDATED STREAM AREA (FT ²) (ACRE)	FILL MATERIAL IN WETLAND AREA (FT ²) (ACRE)	POTENTIALLY INUNDATED WETLAND AREA (FT ²) (ACRE)	WETTED PERIMETER LENGTH (FT)	POTENTIALLY CREATED WETLANDS (FT ²) (ACRE)	POTENTIALLY CREATED OPEN WATER (ACRE)
TB1	23	69	0.002	227	681	0.016	0	0.000	0.26
TB2	27	80	0.002	159	477	0.011	0	0.000	0.14
TB3A	30	90	0.002	76	228	0.005	0	0.000	0.33
TB3B	23	69	0.002	109	327	0.008	0	0.000	
TB4A	30	90	0.002	345	1035	0.024	75	0.002	0.71
TB4B	16	48	0.001	96	288	0.007	0	0.000	
TB5A	16	48	0.001	74	222	0.005	0	0.000	0.19
TB5B	16	48	0.001	59	177	0.004	0	0.000	
TB6	23	69	0.002	169	507	0.012	0	0.000	0.07
HB4	19	57	0.001	158	474	0.011	500	0.011	0.26
TOTALS	223	669	0.015	1,472	4,416	0.101	575	0.013	1.97

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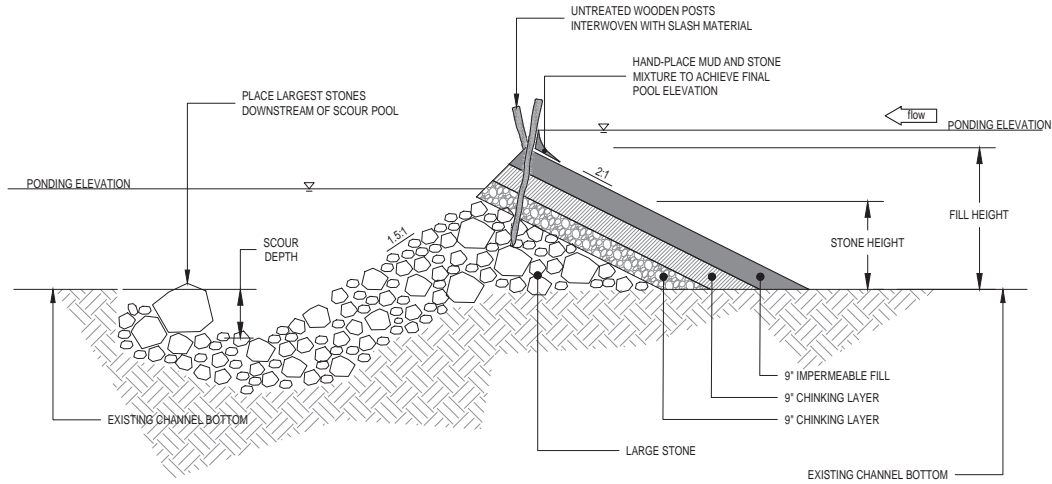
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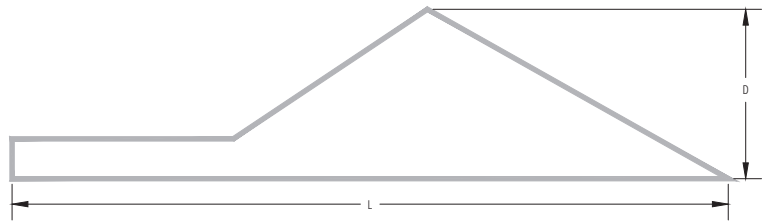
SP-Thomas Br.

C102

1. THE CONTRACTOR SHALL SUBMIT ALL MATERIAL SPECIFICATIONS FOR APPROVAL.
2. IN-CHANNEL PORTIONS OF THE BDA SHALL BE CONSTRUCTED WITH WITH STONES AND MEDIUM SIZED BRANCHES INTERSPERSED. BRANCHES SHALL REACH HORIZONTALLY THROUGH THE STONE IN THE STREAMWISE DIRECTION.
3. SMALLER STONE GRAIN SIZES MAY BE REQUIRED TO ENSURE THE IN-CHANNEL BDA BREAKS-AWAY DURING A CATASTROPHIC FLOOD. THESE BREAK-AWAY SECTIONS WILL BE SELECTED BY THE ENGINEER.
4. THE CROWN LAYER OF THE IN-CHANNEL BDA IS THE TOP 9 INCHES, UP TO THE CREST ELEVATION. THIS CROWN LAYER SHALL BE PLACED BY HAND, CAREFULLY FILLING ALL INTERSTITIAL SPACES WITH CONSECUTIVELY SMALLER GRAIN SIZES AND FINISHING WITH NATURAL MATERIALS (E.G. LEAF LITTER).
5. PROPS SHALL BE APPLIED TO ALL IN-CHANNEL BDA FEATURES. PROPS SHALL CONSIST OF LONG BRANCHES THAT REACH FROM THE DOWNSTREAM STREAM BED AND LEAN AGAINST THE STONE EMBANKMENT.
6. PROPS SHALL BE SELECTED BASED ON DURABILITY (SEE DURABILITY TABLE), WITH A PREFERENCE TOWARD MORE DURABLE MATERIAL.
7. SCREENS SHALL BE APPLIED TO THE THE INLET AND OUTLETS FOR THE WATER LEVEL CONTROL STRUCTURE. SPACING (OPEN AREA) SHALL BE NO LESS THAN 1 INCH AND NO GREATER THAN 2 INCHES.



BDA SECTION :: IN-CHANNEL



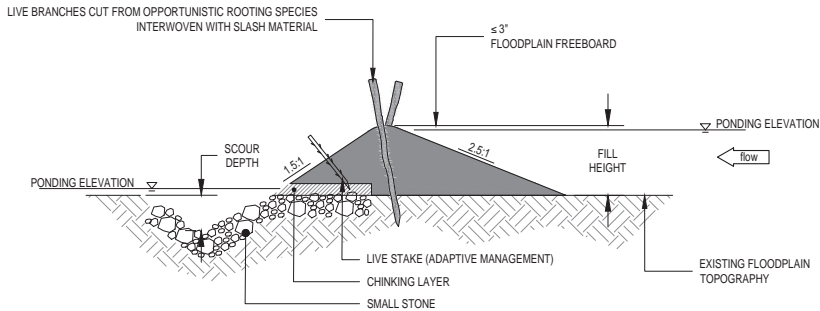
DIAGRAMATIC IN-CHANNEL BDA SECTION

	EXISTING			PROPOSED			
	CHANNEL BW (FT)	CHANNEL TW (FT)	CHANNEL DEPTH (FT)	STONE FILL DEPTH (FT)	TOTAL FILL DEPTH (FT)	FILL ALONG STREAMWISE LENGTH (FT)	TOTAL WEIR LENGTH (FT)
TB1	5	20	6.0	3.5	5.0	23	39
TB2	3	19	6.5	4.5	6.0	27	42
TB3A	3.5	5	2.0	5.5	7.0	30	128
TB3B	3.5	11	3.5	3.5	5.0	23	128
TB4A	2	12	4.0	5.5	7.0	30	252
TB4B	3	20	3.0	1.5	3.0	16	252
TB5A	2	12	4.0	1.5	3.0	16	202
TB5B	2	18	3.5	1.5	3.0	16	210
TB6	3	7	1.7	3.5	5.0	23	64
HB4	7	19	2.8	2.1	4.0	19	158

See Table for Reach-Specific Dimensions

MATERIAL	COMMON NAME	CLASS	TARGET SPECIFICATION	AVAILABLE QUARRY SPECIFICATION
LARGE STONE	RIPRAP	D15		TBD
		D50		
		D85		
		D100		
SMALL STONE	BALLAST	D15		TBD
		D50		
		D85		
CHINKING LAYER #1	GRAVEL	D15		TBD
		D50		
		D85		
CHINKING LAYER #2	PEA GRAVEL	D15		TBD
		D50		
		D85		
SAND	WELL-GRADED SAND	D15		TBD
		D50		
		D85		
IMPERMEABLE CLAYEY FILL	SAND	D15		TBD
		D50		
		D85		

MATERIAL SPECIFICATIONS



BDA SECTION :: IN-FLOODPLAIN

Manufactured by:
Agri Drain CORPORATION
PO Box 458 • 1462 340th Street • Adair, Iowa 50002
Phone: 1-800-232-4742 • Fax: 1-800-262-3353
www.agridrain.com • email: info@agridrain.com

Inline Water Level Control Structure™

- Available in manual or automated.
- Constructed of rugged ½" PVC with lockable plastic lid.
- Stainless steel screws and custom anodized aluminum corner extrusions used for strength and durability.*
- Flexible couplers allow PVC, plastic pipe, or other materials to be easily attached. (Please specify type of pipe when ordering.)
- Rugged injection molded stoplogs in 5" and 7" heights for adjustability (included in structures with 4" through 12" pipe sizes).
- PVC stoplogs with metal hooks in 5" and 7" heights for adjustability (included in structures with 15" through 24" pipe sizes).
- Stoplog maintenance recommended: Remove stoplogs and grease seal with Ultra Lube (included). Ensure there is no debris in the tracks or along the bottom of the structure. Replace stoplogs after greasing, ensuring bottom stoplog is installed first.
- To minimize seepage, align stoplogs firmly against one side of the stoplog track.
- Stoplogs must remain in track during structure installation.
- Structures are intended for gravity flow; some seepage may occur.
- 5-year warranty on all standard structures.

*For water that is caustic, acidic, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.

Pipe Size	Available Heights	Width	Depth
4"	2' - 12'	8"	10"
6"	2' - 12'	8"	10"
8"	2' - 12'	11 1/8"	12"
10"	2' - 12'	14"	16"
12"	2' - 12'	16"	20"
15"	2' - 12'	20"	24"
18"	2' - 12'	24"	28"
24"	3' - 10'	31"	39"

Stoplog Retainer

Hold extra stoplogs up & out of the way!

- Stainless steel retainer hooks to lowest stoplog that you want to hold up within your Inline Water Level Control Structure™.



Call for details on Automated.

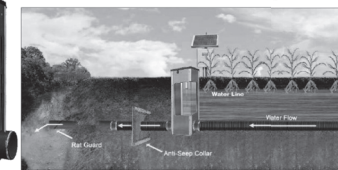
US Patent No. 6,715,558 B2
US Patent No. 6,798,254 B2
Canadian Patent No. 2,403,456
Canadian Patent No. 2,460,076

Comes with a handle to install and remove stoplogs.

Stoplog seal ensures a tight fit to prevent leakage.

Rugged injection molded stoplogs used in structures with 4", 6", 8", 10", and 12" pipe sizes.

PVC stoplogs with stainless steel lifting hooks used in structures with 15", 18", and 24" pipe sizes.



DUAL WALL FABRICATED TEES

4" - 30" DIAMETER

PART #	PIPE SIZE	A	B	JOINT
0460AN	4 in (100 mm)	12.8 in (324 mm)	6.2 in (158 mm)	*
0661AN	6 in (150 mm)	16.5 in (419 mm)	8.1 in (207 mm)	*
0862AN	8 in (200 mm)	21.0 in (533 mm)	10.6 in (268 mm)	*
1063AN	10 in (250 mm)	26.0 in (660 mm)	12.6 in (320 mm)	*
1264AN	12 in (300 mm)	30.7 in (780 mm)	15.4 in (390 mm)	*
1264AN85B	12 in (300 mm)	21.1 in (536 mm)	10.6 in (268 mm)	ST
1264AN85B	12 in (300 mm)	21.1 in (536 mm)	10.6 in (268 mm)	WT
1565AN	15 in (375 mm)	38.9 in (987 mm)	19.4 in (494 mm)	*
1565AN85B	15 in (375 mm)	23.3 in (592 mm)	11.7 in (296 mm)	ST
1565AN85B	15 in (375 mm)	23.3 in (592 mm)	11.7 in (296 mm)	WT
1866AN	18 in (450 mm)	42.9 in (1089 mm)	21.4 in (545 mm)	*
1866AN85B	18 in (450 mm)	26.8 in (681 mm)	13.4 in (340 mm)	ST
1866AN85B	18 in (450 mm)	26.8 in (681 mm)	13.4 in (340 mm)	WT
2467AN	24 in (600 mm)	50.4 in (1280 mm)	25.2 in (640 mm)	*
2467AN85B	24 in (600 mm)	37.8 in (960 mm)	18.9 in (480 mm)	ST
2467AN85B	24 in (600 mm)	37.8 in (960 mm)	18.9 in (480 mm)	WT

* = PLAIN END
ST = SOIL TIGHT
WT = WATER TIGHT
** LIMITED AVAILABILITY PLEASE SEE INJECTION MOLDED FITTING SECTION FOR OTHER AVAILABLE FITTINGS

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY



DRAWING #	2400
DRAWN BY	JCS 06.23.07
APPROVED BY	JCS 06.26.07
REVISIONS	1.00 03.09.13

WATER LEVEL CONTROL STRUCTURE

Figure 5e

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Preliminary Drawings

Details

C801



Mulberry Gap
Ecosystem Restoration for
The School of Wholeness and Enlightenment
Marshall, NC

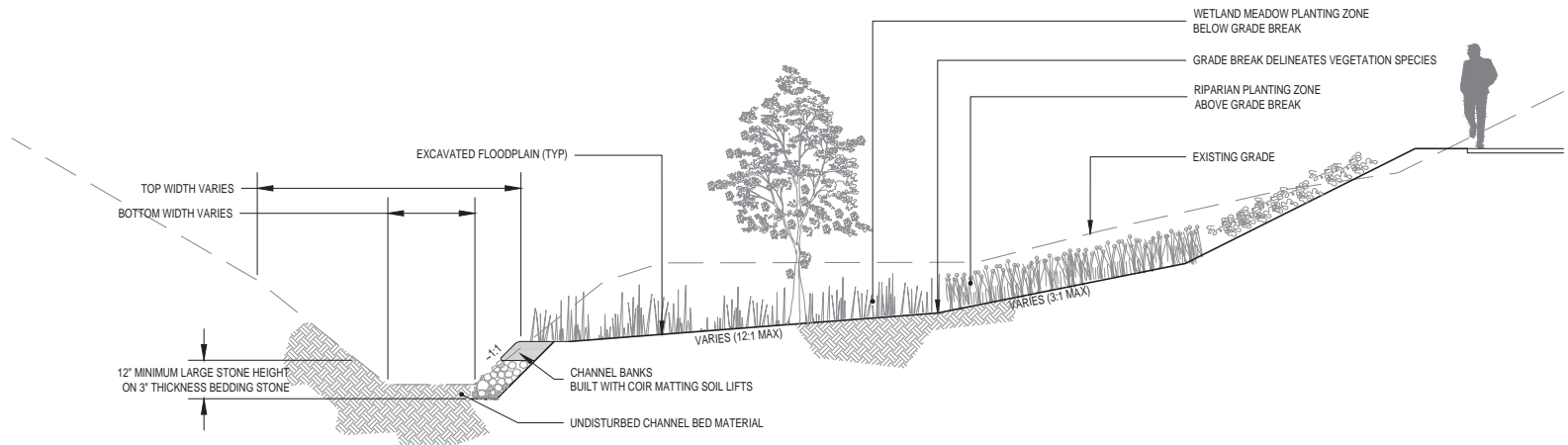
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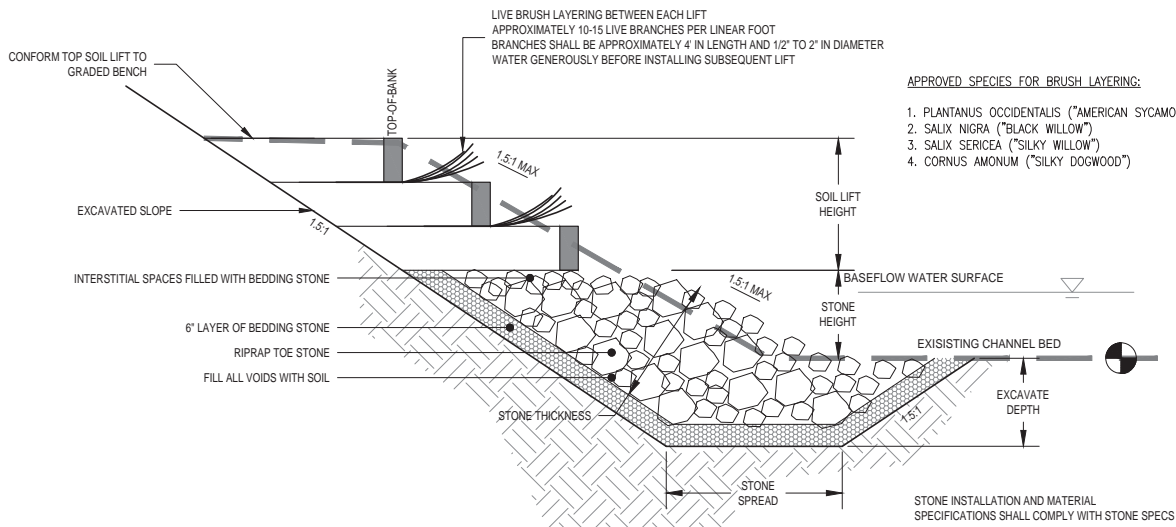
Preliminary Drawings

Typical Sections

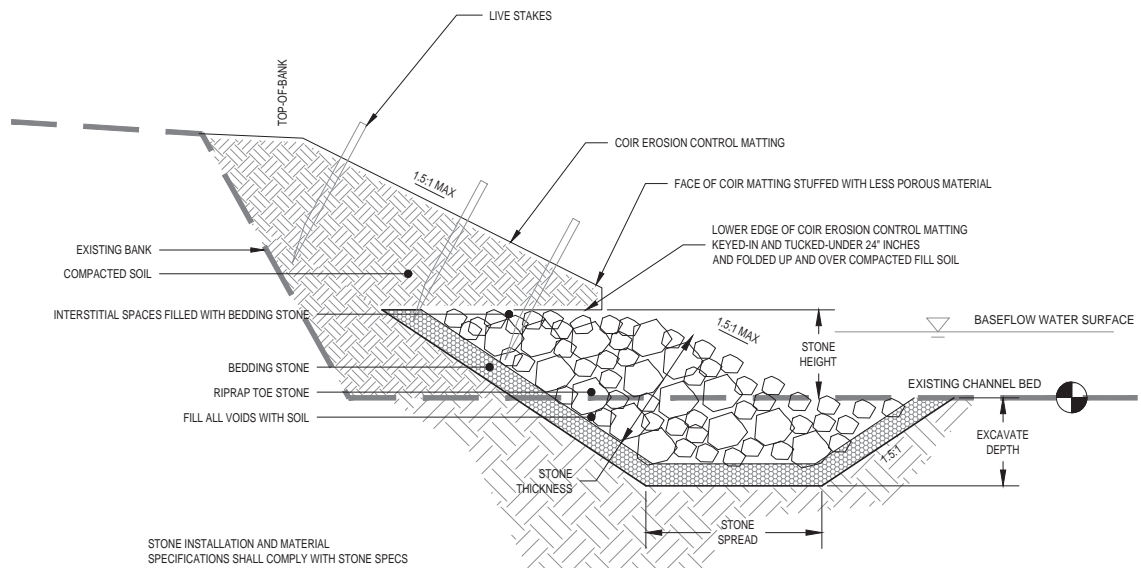
C802



A
ENHANCEMENT REACH TYPICAL SECTION
LOOKING DOWNSTREAM
SCALE: 1" = 5'



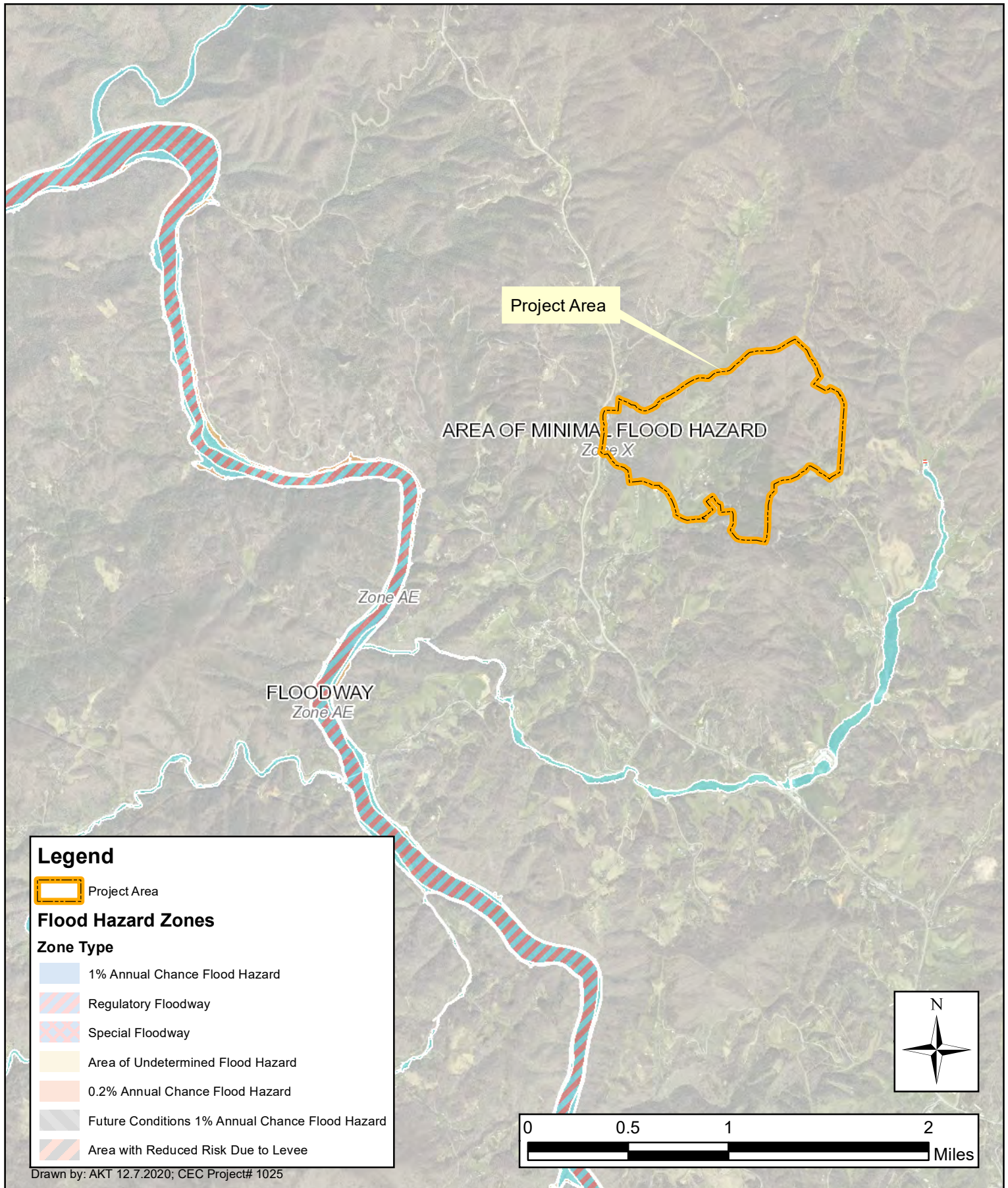
B
REVETMENT with VEGETATED SOIL LIFTS
ALTERNATIVE 1
LOOKING UPSTREAM
SCALE: 1" = 2'



C
REVETMENT with STABILIZED SLOPE
ALTERNATIVE 2
LOOKING UPSTREAM
SCALE: 1" = 2'

Figure 5f

Mulberry Gap Farms (+/- 448 AC)



Madison County,
North Carolina

ClearWater

145 7th Avenue West, Suite B
Hendersonville, NC 28791

FEMA Floodplain Map
FIRM Panel 3700879800J
Effective 6/2/2009
Figure 6